REMARKS

Claims 1 through 20 are pending in this application. Claims 1, 13, and 19 are amended herein. Claims 1, 13, and 19 are amended for clarity purposes only, and not for any reason of patentability. Support for the amendments to the claims may be found at page 4, lines 8-11 of the specification as originally filed. This amendment is believed to place the application in condition for allowance, and entry thereof is solicited earnestly. In the alternative, entry of this amendment is requested to place the application in better condition for an appeal of the final rejection to the Board of Patent Appeals and Interferences. Further reconsideration is also requested based on the foregoing amendment and the following remarks.

Claim Rejections - 35 U.S.C. § 103:

Claims 1 through 20 were rejected under 35 U.S.C. § 103 as being unpatentable over Åslund, WO 99/36214 (Åslund '214) in view of Åslund et al. US 5,460,641 (Åslund '641). The rejection is traversed to the extent it might apply to the claims as amended. Reconsideration is earnestly solicited.

Claim 1 recites:

"sintering the green body at a temperature of about 1100-1400°C to allow the carbon remaining in the binder to diffuse homogeneously into the sintered body."

Neither Åslund '214 nor Åslund '641 teach, disclose, or suggest sintering a green body at a temperature of about 1100-1400°C to allow the carbon remaining in the binder to diffuse homogeneously into the sintered body, as recited in claim 1. In both Åslund '214 and Åslund '641, rather, all of the binder is removed before sintering. Since all of the binder is removed before sintering, no carbon remains in the binder to diffuse into the sintered body.

In particular, Åslund '214 describes removing the binder by preheating in air at a temperature of 300° to 500° before sintering, at page 6, lines 13 and 14. Similarly, in Åslund '641, binding agent is described as having to be removed before or during sintering at column 1, line 67, continuing at column 2, lines 1-3, or otherwise contamination will result. Even though Åslund '641 mentions the possibility that some binder could remain until sintering starts, it's clear from the overt warning about contaminating the metallic powders that he's not the least bit happy about the possibility. Thus, Åslund '641 teaches away from allowing carbon remaining in the binder to diffuse into the sintered body.

Additionally, Åslund '641 describes pre-heating the crude piece to remove lubricant and gelatin (i.e. binder) at column 3, lines 64 and 65, and describes sintering only after the gelatin and lubricant have been completely eliminated at column 4, lines 3 and 4.

Since neither Åslund '214 nor Åslund '641 teach, disclose, or suggest sintering a green body at a temperature of about 1100-1400°C to allow the carbon remaining in the binder to diffuse homogeneously into the sintered body, their combination cannot, either.

The final Office action asserts that the two-step heating of Åslund '214 would inherently result in the residual carbon from the gelatin binder to become diffused into the iron based powder. This assertion, however, flies in the face of the explicit teaching discussed above that all of the binder is to be removed before sintering. No carbon would be available from the binder to diffuse into iron based powder in Åslund '214 if it is practiced correctly. The only carbon available is the carbon that the iron contained in the first place, plus the iron that diffused into the iron from the binder *prior* to removal, i.e. while the green body was pre-heated in air.

Finally, Åslund '214 does not take place under the same conditions as the claimed invention, contrary to the assertion at page 3 of the final Office, since, as the final Office action acknowledges graciously a little further down, Åslund '214 does not disclose gelatin removal that takes place under a non-oxidizing atmosphere. The final Office action seeks to ameliorate this deficiency of Åslund '214 by combining it with Åslund '641, saying that "(I)t would have been obvious to one having ordinary skill in the art at the time of the invention to use hydrogen as the gelatin removal atmosphere in the invention of Åslund '214 as taught by Åslund et al. in order to use a similar inert atmosphere."

Hydrogen, however, is dangerous (Cf. the "Hindenberg" disaster) and the equipment required to produce it and protect the environment surrounding the pre-heating furnace would have been expensive. Air, on the other hand, is free. Why would persons of ordinary skill in the art have gone to the extra expense of installing equipment to re-produce a hydrogen atmosphere at the furnace used for the pre-heating step simply because similar equipment had already been installed at the sintering furnace? It is submitted that persons of ordinary skill in the art at the time of the invention would have been deterred from replacing the air of the pre-heating step of Åslund '214 with the hydrogen atmosphere of Åslund '641, contrary to the assertion in the final Office action, since such a step would have entailed unnecessary expense.

Claim 1 is submitted to be allowable. Withdrawal of the rejection of claim 1 is earnestly solicited.

Claims 2 through 12 depend from claim 1 and add additional distinguishing elements. Claims 2 through 12 are thus also submitted to be allowable. Withdrawal of the rejection of claims 2 through 12 is earnestly solicited.

Claim 13 recites:

"sintering the green body at a temperature of about 1100-1400°C to allow the carbon remaining in the binder to diffuse homogeneously into the sintered body."

Neither Åslund '214 nor Åslund '641 teach, disclose, or suggest sintering a green body at a temperature of about 1100-1400°C to allow the carbon remaining in the binder to diffuse homogeneously into the sintered body, as discussed above with respect to the rejection of claim 1. Claim 13 is thus submitted to be allowable for at least those reasons discussed above with respect to the rejection of claim 1. Withdrawal of the rejection of claim 13 is earnestly solicited.

Claims 14 through 18 depend from claim 13 and add additional distinguishing elements. Claims 14 through 18 are thus also submitted to be allowable. Withdrawal of the rejection of claims 14 through 18 is earnestly solicited.

Claim 19 recites:

"heating the green body under a protective atmosphere that prevents oxidation to remove the non-carbon content of the binder substantially without removal of carbon content from the binder."

Neither Åslund '214 nor Åslund '641 teach, disclose, or suggest heating the green body under a protective atmosphere that prevents oxidation to remove the non-carbon content of the binder substantially without removal of carbon content from the binder, as recited in claim 19. In both Åslund '214 and Åslund '641, rather, all of the binder is removed before sintering, as discussed above with respect to the rejection of claim 1. Since all of the binder is removed before sintering, all of the carbon content of the binder is removed as well. Claim 19 is thus submitted to be allowable for at least those reasons discussed above with respect to the rejection of claim 1. Withdrawal of the rejection of claim 19 is earnestly solicited.

Claim 20 depends from claim 19 and adds additional distinguishing elements. Claim 20 is thus also submitted to be allowable. Withdrawal of the rejection of claim 20 is earnestly

solicited.

Conclusion:

Accordingly, in view of the reasons given above, it is submitted that all claims 1 through 20 are allowable over the cited references. Allowance of all claims 1 through 20 and of this entire application are therefore respectfully requested.

Please charge any fee or credit any overpayment pursuant to 37 C.F.R. §§1.16 or 1.17 to Deposit Account No. 02-2135.

Respectfully submitted,

By _____

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